

## 316. SIPHONARIA ATRA.

*Siphonaria atra*, Quoy et Gaim. Voy. de l'Astrol. vol. ii. p. 337, pl. 25. f. 41, 42.

Painted inside with broad black stripes. Found also in Japan and the Pacific Islands. Length 1 inch.

5. Notes on *Zoanthinæ*, with the Descriptions of some New Genera. By Dr. J. E. GRAY, F.R.S.

M. Milne-Edwards, in his 'Coralliaires' (vol. i. p. 226), divides the *Actinidæ* into two groups:—one in which the covering of the body remains soft and does not form a polypoid; and, secondly, the *Zoanthinæ*, in which the integument of the body thickens and is strengthened with sclerotes, so as to form a coriaceous polypoid. But in the larger character of the family (at p. 298) he adds that they are aggregate polypes, which multiply by basal buds formed of the tegumental tissues; and he confines the family to the genera *Zoanthus* and *Palythoa*,—the first arising from root-like stolons, and the other from a broad laminal expansion.

There can be no doubt that the group so defined is very natural; but there are several genera of *Actininae* that have considerable relation to *Zoanthus*, not mentioned by Milne-Edwards, which do not come under either of these characters: that is to say, there are some which have the outer skin thick and strengthened with imbedded sand or calcareous particles, which are not aggregate and do not increase by basal buds, arising from neither root-like fibres nor an expanded base, but which are free; on the other hand, there are other genera which do not arise from basal buds, some of which have a thick cartilaginous skin not strengthened by sand or calcareous concretions, and others which have a thin membranaceous skin.

All these genera have only a single or double row of very short tentacles, which are placed round the edge of the oral disk far from the mouth, which when the oral disk is contracted are completely hidden.

I think that these animals should form a family distinct from *Actinidæ*, which may be called *Zoanthidæ*.

The zoanthoid polypes, in Lesueur, Dana, and Milne-Edwards's 'Coralliaires,' are divided into groups, according to the form of the base from which they arise,—some, as the *Zoanthi*, having cylindrical stolons, and others, as the *Palythoa*, an expanded foliaceous base; the latter are again divided according to whether the polypes are entirely or partially separate, or confluent nearly to the mouth of the cells,—all, no doubt, very good characters for the separation of the species into groups.

They separate themselves into two very natural groups, according to the structure of the external surfaces of the polypes.

In many, which may be called *Zoanthi malacodermi*, or soft-

skinned *Zoanthi*, or *Zoanthinæ*, the surface of the polype is smooth, soft, and fleshy.

Duchassaing and Michellot, in their 'Essay on the Corals of the West Indies,' have established some additional genera.

*The base expanded, laminar.*

1. MAMMILLIFERA, Lesueur.

*Mammillifera*, Duchassaing & Michellot, Mém. Coral. des Antilles, 51.

*The base slender, subcylindrical, creeping.*

2. ZOANTHUS, Cuvier, 179; M.-Edw. Coral. 299.

*Zoantha*, Lamk.

1. ZOANTHUS SOCIATUS, Ellis, Zooph.

2. ZOANTHUS ALDERI, Gosse, Brit. Sea Anem. 305, t. 9. f. 8, t. 12. f. 5.

*Hab.* Coast of Britain.

See other species (Duchassaing & Michellot, Mém. Coral. des Antilles, 1860, p. 49; Dana, Zoophytes, 423).

3. PALYTHOA.

The polypes close together, arising from a net-like anastomosing linear base.

PALYTHOA BERTHOLETI.

*Solitary, rarely irregularly aggregate.*

4. ISAURUS, Gray, Spic. Zool. 8, 1825.

*Isaure*, Savigny.

*Isaurus*, Duchassaing & Michellot, Mém. Coral. des Antilles, 1860, p. 51, t. 8. f. 10.

ISAURUS TUBERCULATUS, Gray, Spic. Zool. 8, t. 6. f. 3, 1825.

*Hab.* —.

B.M.

This genus and species was described and figured in 1825 from a specimen in the British Museum.

5. ? ORINIA, Duchassaing & Michellot, Mém. Coral. des Antilles, 54.  
Separate.

6. PALES.

Body cylindrical; isolated, solitary, clustered, or sometimes proliferous, but each specimen having a separate base; outer skin smooth, thin, olive-brown, slightly concentrically wrinkled; the tentacles numerous. The internal laminæ numerous, slender, only

slightly elevated, straight and parallel above, with a thickened edge and sinuous below.

PALES CLIFTONI. (Fig. 1, p. 236.)

*Hab.* Western Australia (*Mr. Clifton*).

The bodies are from  $\frac{1}{3}$  to  $\frac{1}{2}$  inch in diameter; but they vary greatly in length, some being as much as 2 inches long; but the general length seems to be about an inch,—that is to say, of the specimens in spirits; when alive they are probably longer. They are found attached to shells, both isolated and in clusters, and the larger ones are attached to the base of each other, forming a somewhat stellate cluster, as if they were free floating in the sea.

In others (the *Zoanthi sabuliferi*, or *Palythæina*) the outer surface of the polypes is hard, crustaceous, and thickened with imbedded grains of sand.

This group may be divided into sections by the habit of the animal, some being attached to marine bodies, and others living free.

#### I. *Coral free, unattached.*

1. SPHENOPUS, Steenstrup, Overs. Dansk. Vidensk. Selskabs. Forhandl. 1856, p. 37.

*Sabella*, sp., Schröter, Gmelin.

The type of this genus is an animal that was long ago figured as a *Sabella* by Schröter, and named from Schröter's figure *Sabella marsupialis* by Gmelin. Professor Steenstrup has found the original specimens in spirits, which were collected by Johns, the Moravian missionary, in Tranquebar, and has described them and their anatomy, under the name of *Sphenopus marsupialis*, in the 'Proceedings of the Danish Academy' for 1856. But I am not aware that any other specimen had been collected, until those which were sent to the Liverpool Museum. M. Milne-Edwards evidently has not seen them; for he places the genus *Stenopus* with the free-bodied, soft-skinned *Actinæ*, giving a very short account of the animal, evidently extracted from Steenstrup's paper, and without even mentioning the habitat.

The body is free, rather variable in shape, but more or less like a small flask; the upper part is cylindrical, truncated when contracted, with a central opening; the hinder part is more or less compressed and half ovate, the hinder portion in some specimens being truncated or rounded, and in others more or less produced, with a blunt rounded end. The outer surface is hard, formed of agglutinated sand closely imbedded in a thick cartilaginous case. The upper truncated part of the case has some indistinct lines, which are often scarcely to be distinguished, radiating towards the central aperture; in one of the specimens there are three round sunken pits on each side of the neck of the body, just under the swollen edge of the truncated upper end. In some of the other specimens there are slightly

impressed longitudinal lines on the neck, where these pits are placed in the specimen above described.

The inner coat of the body is membranaceous, with sixteen membranaceous folds, which extend to the base of the body; the lower part of the cavity is filled with vermicular cylindrical ovaries.

The mouth of the outer case, which is much contracted in spirits, is furnished with a single series of short tentacles. The laminæ of the stomach have a cartilaginous edge; they extend to the base of the cavity.

The details of the anatomy are given in Professor Steenstrup's paper, and he shows the darting stinging threads in the skin (fig. 8).



Fig. 1. *Pales cliftoni*.

2, 3, 4, 5. *Sphenopus marsupialis*.

**SPHENOPUS MARSUPIALIS. (Figs. 2, 3, 4, 5.)**

*Sabella* (die beutelförmige *Sabelle*), Schröter, Einleit. Conch. ii. p. 591. no. 19, t. 6. f. 21.

*Sabella marsupialis*, Gmelin, S. N. 3751.

*Sphenopus marsupialis*, Steenstrup, Oversigt Kgl. Dansk. Vidensk. Selsk. 1856, p. 37, t. 1. f. 1-8; M.-Edwards & Haime, Coral. i. 287.

*Hab.* Tranquebar (*Johns*).

The specimens here figured were collected at Pulo Faya, in the China Seas, by Capt. Perry of the ship 'Richard Cobden,' who has kindly presented specimens to the British Museum and to the Free Museum at Liverpool.

*Var. bursiformis.* The body variable in shape (figs. 2-5), more or less produced and compressed behind.

*Hab.* Massachusetts Bay, U. S. America.

B.M.

**2. SIDISIA, Gray, P. Z. S. 1858, p. 582.**

Coral free, cylindrical, simple, or developing lateral basal buds, giving it a more or less branched form.

SIDISIA BARLEEI, Gray, P. Z. S. 1858, p. 532, t. 10. f. 6.

*Zoanthus couchii*, var., Holdsworth, P. Z. S. 1858, p. 560.

*Zoanthus couchii*, var. *liber*, Gosse, Brit. S. Anem. 297, t. 9. f. 9.

*Hab.* Orkney, Brasseys Island (*Mr. Barlee*).

## II. Coral attached; cells arising from a foliaceous expanded base.

### 3. EPIZOANTHUS.

The base expanded, foliaceous (parasitic on shells); the cells cylindrical, simple, separate from each other from the base; tentacles numerous.

#### EPIZOANTHUS PAPILLOSUS.

*Spongia suberea* (part.), Johnston, Mag. N. H. vii. 494. f. 60.

*Dysidea? papillosa*, Johnston, Brit. Sponges, 109. f. 18, t. 16. f. 6, 7; Gray, P. Z. S. 1858, p. 531.

*Zoanthus couchii* (part.), Holdsworth, P. Z. S. 1858, p. 557, t. 10. f. 3.

*Zoanthus couchii*, var. *diffusa*, Gosse, Brit. Sea Anem. 298, t. 9. f. 10.

*Hab.* Coast of England; Coast of Massachusetts, U. S. B.M.

Dr. Johnston, though he described this animal as a sponge, very justly observed that it was "nearly allied to the *Alcyonium ocellatum* of Solander (Zoophytes, 180, t. 1. f. 6), whatever that may be."

This species is found entirely covering some shells which are inhabited by *Paguri*, or Hermit Crabs, on the coast of Massachusetts, in North America. Specimens were collected in forty-fathom water by Capt. Mortimer of the ship 'America,' and by him presented to the British Museum and the Free Museum at Liverpool.

It appears to envelope more than one species of shell, as the form of some is much more elongated and turreted than others. But the shells are entirely destroyed, probably absorbed by the Hermit Crab to make room for the enlargement of its body; for when the coral mass is cut through, the cavity, which has all the forms of the whorls of a spiral shell, seems only to be covered with the basis of the coral, strengthened by the sandy particles that are imbedded in it.

The coral covers the shell with a smooth coat, only leaving the mouth of the shell free for the emission of the crab. This coat is scattered with distinct radiating cylindrical bodies, thickened and rounded near the upper margin; the apex when expanded is flat, with close radiating white lines, and a central circular aperture.

One of these bodies is generally placed on the apex of the spire of the shell, and another on the front end of the aperture and the back of the shell; and the sides of the spire are furnished with from three to eight or nine similar bodies, which diverge from each other. The under surface of the body (that is to say, the part of it that is trailed along the ground as the animal walks) is smooth and free from any of these cylindrical bodies of the *Actinia*. The bodies differ in length, according to their age and the position they occupy on the surface of the shell, and they always diverge from each other;

and those on the lip and the edge of the shell are generally the largest, as they are in a position where they can obtain the most nourishment. They are gradually developed from the surface of the coral that covers the shell. They first appear as a small circular spot, which enlarges and gradually raises itself above the surface of the surrounding coral until it forms a cylindrical body, which is generally considerably higher than it is broad. The adult or well-developed body sometimes breaks off from the base, leaving a circular concave scar, with pores round its circumference, which is the basis of the ovaries of the animal.

4. GEMMARIA, Duchass. & Michel. Mém. Coral. des Antilles, 55.

*Mammillifera*, sp.

*Palythoa*, sp., Milne-Edw. Coral. i. 303.

Base expanded; polypes not soldered together.

Duchassaing and Michellot describe several species of this genus; to these add

GEMMARIA? SULCATA.

*Zoanthus sulcatus*, Gosse, Brit. Sea Anem. 303, t. 9. f. 7, t. 12. f. 2.

*Hab.* Devonshire.

Tentacles twenty-two, in two rows; upper half of polypes naked.

5. PALYTHOA, Lamx. Hist. Polyp. 361; Duchassaing & Michellot, Mém. Coral. des Antilles, 53, 1860.

*Palythoa* A A & A A A, Milne-Edw. Coral. 304.

*Cavolina*, sp., Schweiger.

*Corticifera*, Lesueur.

*Mammillifera*, Ehr., Blainv.

The polypes soldered side by side.

1. PALYTHOA MAMMILLOSA, Lamx.

*L. stellata*, Lamx.

*Alcyonium mammilloso*, Solander, Zooph. t. 1. f. 4, 5.

2. PALYTHOA AXINELLÆ, O. Schmidt, Sponges of the Adriatic, p. 61, t. 6. f. 1, 2.

Polype short, broad, on an expanded base, white when dry.

*Hab.* Adriatic. Parasitic on *Axinella cinnanomea* and *A. verrucosa*, O. Schmidt (Sponges of the Adriatic, pp. 61, 62). Esper called the latter sponge *Spongia verrucosa*, from the presence of this polype.

Professor Oscar Schmidt described a species of *Axinella* which has circular eight-rayed stars scattered on the surface and sunk in the substance of the sponge, under the name of *Axinella polypoides* (p. 62, t. 8. f. 5). He calls these stars *oscles*; but they are very unlike the oscule of any other sponge, and I think they may be parasitic *actinioid* polypes. Mr. Bowerbank, in his 'British Sponges' (t. 20. f. 307), figures a very similar body, which he describes as

a portion of the dermal surface of an undescribed sponge from the East Indies, having numerous depressed porous areas furnished with stomata, like protective organs. Mr. Tyler, F.L.S., has kindly shown me some specimens of the sponge mounted, as a transparent and as an opaque object; and they are very like a parasitic actinioid polype; but the rays are strengthened with spicules on the surface, and on the tips with some prominent ones (which form a pencil), unlike any *Actinia* I have seen, and so they are perhaps sponges. If so, they ought to form a genus, which may be called *Astrostoma*.

III. *The coral attached; the cells arising from a slender subcylindrical base.*

6. CAROLIA.

The base slender, subcylindrical, creeping; the cell cylindrical, separate, and far apart from the base.

CAROLIA COUCHII.

*Zoanthus couchii*, Johnston; Couch, Cornish Fauna, iii. 73, t. 15. f. 3; Johnston, Brit. Zoophytes, 202, t. 35. f. 9 (cop. Couch); Holdsworth, P. Z. S. 1858, p. 557, t. 10. f. 4-7 (not fig. 3).

*Zoanthus couchii*, var. *linearis*, Gosse, Brit. Sea Anem. 298, t. 10. f. 5.

*Hab.* Cornwall.

IV. *Polypes forming a network, sunk in sponges; the buds arising the upper or cephalic edge.*

7. BERGIA, Duchass. & Michellot, Coral. des Antilles, 54, 1860.

*Alcyonium*, sp., Lamk.

BERGIA SERPENS.

*Alcyonium serpens*, Lamk.

*Bergia catenularis*, Duch. & Michel. 54, t. 8. f. 12.

*Hab.* West Indies.

B.M.

V. *Polypes attached, solitary, with a rather expanded base.*

8. TRIGA.

The coral subcylindrical, solitary, attached, with a rather expanded base; outer coat coriaceous, sandy, concentrically wrinkled.

TRIGA PHILIPPINENSIS.

B.M.

Coral subcylindrical, clavate, rather narrowed near the base, concentrically wrinkled; end convex, obscurely radiately striated.

*Hab.* Philippines, attached to small pebbles (*Cuming*).

The coral varies from an inch to an inch and a half in length.

The genera *Iluanthos* of Forbes (Ann. of Nat. Hist. v. 1840, p. 184, t. 3. f. 1) and *Peachia*, Gosse (Trans. Linn. Soc. xxi. 267), may

belong to this family, and form a section of it which has a soft thin skin.

The genus *Edwardsia*, Quatrefages (Ann. des Sci. Nat. xviii. 65, 1842), and *Solanthus* of Gosse (Ann. Nat. Hist. xii. 1853, p. 157), may also belong to this tribe, and form a section characterized by the middle portion of the skin of the body being thickened, so as to form an imperfect tubular polyperoid, into which the soft anterior and posterior portion of the body are retracted for protection.

The *Edwardsia vestita* of Forbes (Ann. Nat. Hist. viii. 244. t. viii. 1842, and xii. 42, 1843) is most probably a *Cerianthus*, which forms a tube of agglutinated sand, like many Annelides, for the base of its body.

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February 28, 1867.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

The Secretary called the attention of the Meeting to several recent additions to the Society's Menagerie, amongst which were—

1. A male example of the wild Swine of *Formosa* (*Sus tairanus*, Swinhoe), received by the ship 'Island Queen,' January 17th, having been obtained for Mr. Swinhoe by Mr. Gregory, H.M. Vice-Consul at Tamsuy, and forwarded to the Society by Mr. Swinhoe.

This animal was stated by Mr. Selater to be very nearly allied to, if not identical with, *Sus leucomystax* of Japan, of which the Society had previously possessed a female specimen, and was apparently very different from the curious red pig of the savages of Formosa, of which Mr. Swinhoe had sent three examples to the Society on the 25th of October, 1866, in the 'Maitland,' and which had been spoken of as *Sus tairanus* in a former communication on the subject (P. Z. S. 1866, p. 419).

2. A pair of Saiga Antelopes (*Saiga tatarica*, Pallas), received on deposit in November 1866, and recently purchased, as being apparently likely to do well in the Society's Menagerie. A drawing by Mr. Wolf was exhibited (Plate XVII.) showing the peculiar sheep-like appearance of this singular Antelope.

Mr. W. H. Flower exhibited a skull of the newly described Tapir of Panama (*Elasmognathus bairdi*, Gill, Pr. Acad. Sc. Phil. 1866, p. 183), belonging to the collection of the Royal College of Surgeons, and pointed out the characters which distinguish it from *Tapirus americanus* and *T. malayensis*, the most prominent of which was the complete osseous septum between the nasal apertures. Mr. Flower did not propose to give any further description of this animal at present, as it was understood that Professor Gill was preparing a complete account of it. The skull had been obtained by a collector at one of the stations of the Panama Railway.